JPL

Validation Update

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AIRS Science Team Meeting

February 21, 2001

Pasadena

Today's Topics

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- Report on the February 7 Aqua Validation Working Group meeting at GSFC.
- Validation software status
- Update on primary validation data sources

Aqua Validation Meeting General Impressions

- Several common validation issues
  - Clear sky identification is key
  - Upwelling radiance, SST, LST under clear sky is next
  - Upper trop water of particular concern for CERES

- Standards for data distribution and formatting are needed

- The selected Aqua validation proposals will be announced on or near February 23, according to David Starr

AIRS Aqua-wide Validation Issues

From page 13 of the current AIRS Team Science Validation Plan:

Inter-Aqua Data for AIRS Standard Product Validation	**AIRS Validation Focus**
MODIS cloud retrieval	Clear-sky flag, cloud clearing, VIS / NIR cloud fraction
AMSR-E SST	SST retrieval
MODIS SST	SST retrieval
MODIS, CERES radiance	Radiance
CERES OLR	OLR
CO and Methane from MOPPIT and network	CO, Methane retrievals
Surface-based VIS / NIR	VIS / NIR retrievals
MODIS low cloud indicator	VIS / NIR low cloud algorithm

Aqua Validation Meeting
Relevant Instrument Team Activities

- Vince Salomonson on MODIS
  - Steve Ackerman and others at U. Wisconsin have experience identifying clear sky conditions
  - Upwelling radiance from many sources, e. g., dedicated M-AERI cruise will be used.
    - Some will be useful in our efforts
    - See their Validation Plan linked to AIRS home page

Aqua Validation Meeting
Relevant Instrument Team Activities

- Bruce Weilicki on CERES
  - Early processing backlogged
    - complex data availability requirements for processing
    - ephemeris information delayed ~1 month
  - OLR product calculation requires accurate upper tropospheric water vapor
    - They will oversee a DAO-ECMWF shoot-out this spring for upper trop water vapor (and land skin T / diurnal cycle)

Aqua Validation Meeting
Relevant Instrument Team Activities

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- Bruce Weilicki on CERES (continued)
  - Polar temperature inversions are a concern (!)
  - Upper trop water vapor is important (!)
  - They will measure clear sky ocean radiance with M-AERI

Aqua Validation Meeting
Relevant Instrument Team Activities

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- Elena Loebl on AMSR-E
  - They have well-instrumented land surface experiments
    - Measure T, soil moisture
    - Large area of instrumentation (~50 km diameter)
    - Several locations in central Asia
      - Tibetan plateau (high altitudes)
      - Mongolia (middle altitudes)
    - The effort is led by Eni Njoku at JPL

JPL Validation Software

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- A hierarchy is analyses is needed
  - Granule- and footprint-level display
  - Manipulation of correlative data will be the next development phase
  - Large-scale statistics (as with GSTAT files)

- An unmet action item by JPL is delivery of Vendaval 2.0
  - Currently bullet-proofing the code
  - Will include a suite of graphics software

Correlative Data Activities

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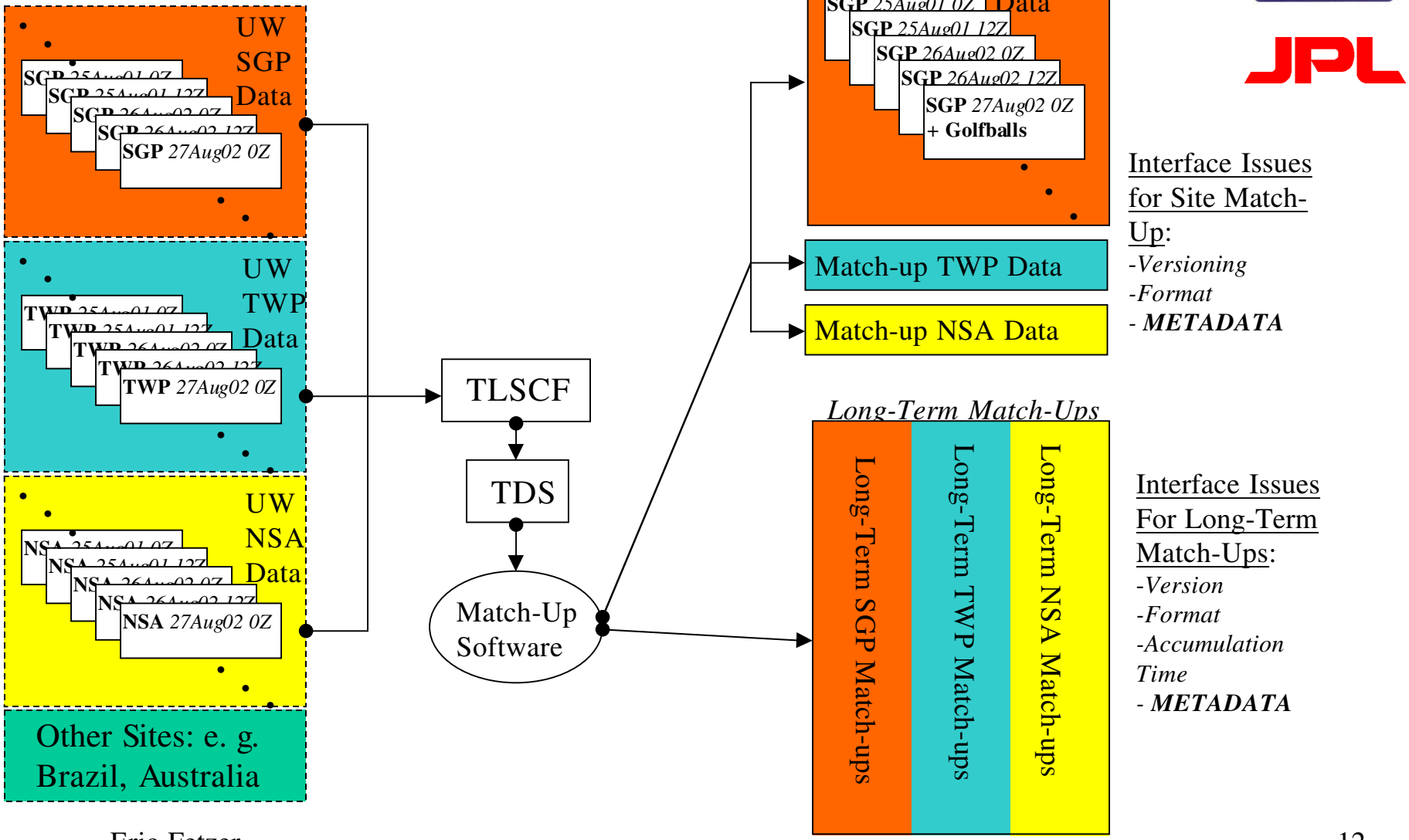
- Acquisition, cataloging of three data types:
  - Sample radiosondes from ESDIS
    - In HDF
    - Latest test set is matched to December 15 simulations
  - ARM CART best estimates
    - In NetCDF
    - We have a one month sample for a non-simulation period
  - Ocean buoys
    - In ASCII
    - Currently testing a one-week sample that includes Dec 15

-- We are about to test regular, daily ingest of all these data -

Correlative Data Activities (continued)

- A common input format to AIRS forward model calculations (RTP) has been defined. Available at:
  - http://asl.umbc.edu/pub/motteler/rtp/rtpspec/rtpspec.html
- Software and format issues will be reviewed after selection of Aqua validation proposals

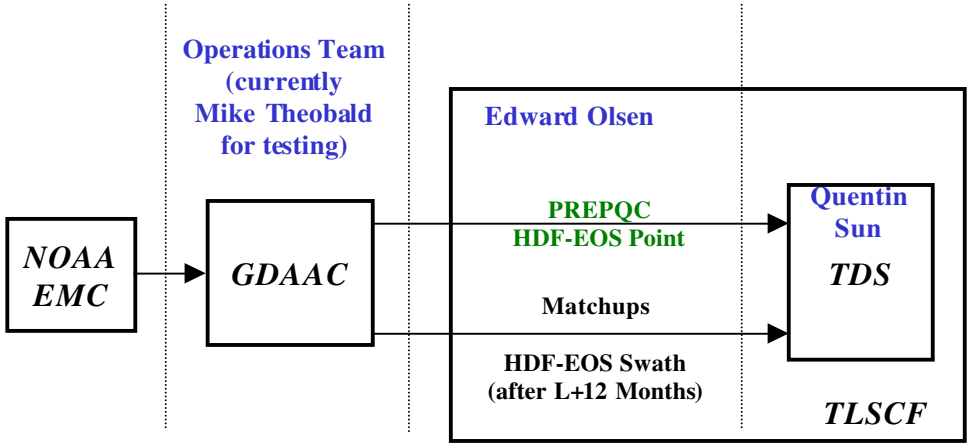
ARM CART Data Flow and Versioning



Interface Issues for Site Match-Up:
- *Versioning*
- *Format*
- ***METADATA***

Interface Issues For Long-Term Match-Ups:
- *Version*
- *Format*
- *Accumulation Time*
- ***METADATA***

Radiosonde (PREPQC) Data Handoff



Interface Issues (and Solutions):
-Data
PREPQC
-Frequency
four files daily
- Data Volume
75 MB/day
-Latency
24 hours
-Format
BUFR
- Ingest

Interface Issues (and Solutions):
-Data
PREPQC
-Format
HDF-EOS Point
-Content
Selected Fields
- Subscription
Push

- Data
Matchups
- Format
HDF-EOS Swath
-Content
nominally 30 matchups/day

Interface Issues (and Solutions):
- Data
Matchups
- Format
HDF-EOS Swath
-Content
nominally 100 matchups/day

- Data
Golden Day Matchups
- Format
HDF-EOS Swath
-Content
Radiosonde or AVN Forecast for selected Profiles

Interface Issues:
-Metadata
-Format
-Content
-Frequency
-Timeliness
-Pull

Data Users

Science Team

NOAA
- **Larry McMillin** — *-Tuning, - Validation*

GSFC
- **Mitch Goldberg** — *-Validation*
- **Joel Susskind** — *-Validation*

MIT
- **Dave Staelin** — *- Validation*
- **Phil Rosenkranz** — *-Validation*

UMBC
- **Larrabee Strow** — *-RTA*

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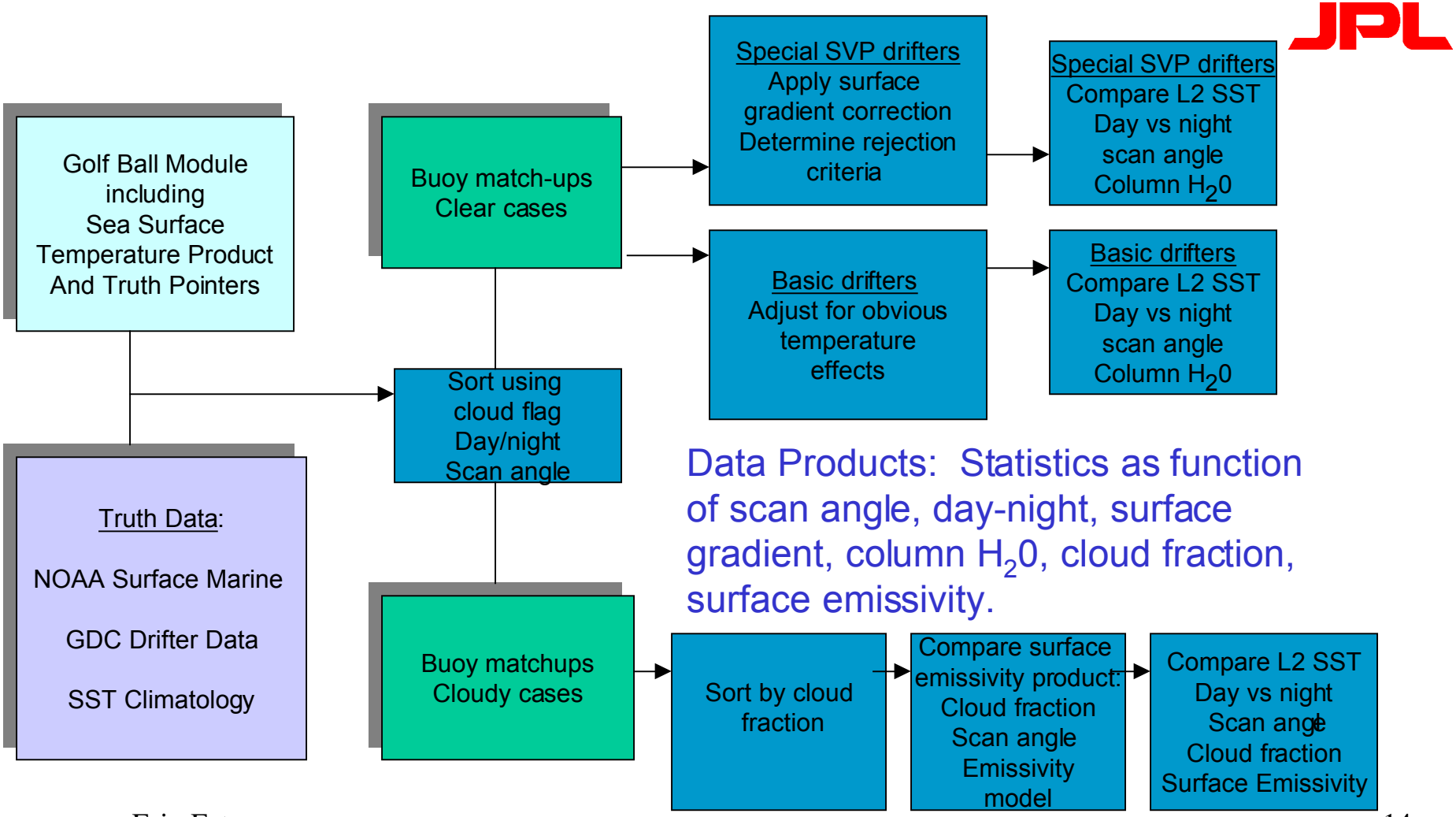
TLSCF
- **Edward Olsen** — *-Radiance Bias/Tuning, -Validation, -Trend Analyses*
- **Eric Fetzer** — *-Validation*
- **Bjorn Lambrigtsen** — *-Validation*
- **Luke Chen** — *-Radiance bias studies*
- **Evan Fishbein** — *-Retrieval QA assessment*

Data Flow for AIRS Sea Surface Temperature Product Validation

Launch + 150 days (or when product available) . . .



Data Products: Statistics as function of scan angle, day-night, surface gradient, column H_20, cloud fraction, surface emissivity.